unusual merit from the fact that the plants yielding the useful products are not named in the vague way too frequent in such discussions, but have been subjected to the critical identification of a systematic expert.

Besides the above-mentioned papers by Dr. Rose, the contribution contains a short article by Prof. L. F. Henderson, characterizing two new plants from Idaho, and another by Professor Coulter and Dr. Rose, describing and figuring an interesting new umbelliferous genus, Hesperogenia, from Mt. Rainier.

B. L. R.

Bailey's Botanizing.[1] — Under the title of *Botanizing*, Professor Bailey of Brown University has issued a revised and enlarged edition of *The Botanical Collector's Handbook*. Few of the methods taught are likely to lead to measurably poor results, though experience will teach profitable modifications of some of them to any boy with Yankee ideas, and most of the suggestions are likely to be worth many times the cost of the book to a beginner.

T.

Botanical Notes. — Important recent papers on seed anatomy are: Pammel, "The Histology of the Caryopsis and Endosperm of Some Grasses" (*Transactions Acad. Sci. of St. Louis*, VIII, No. 11); Pammel, "Anatomical Characters of the Seeds of Leguminosæ, chiefly Genera of Gray's *Manual*" (*loc. cit.*, IX, No. 6); and Schlotterbeck, "Developmental History of Important Seeds. The Anatomy of the Cotton Seed and the Development of its Seed Coats" (*Pharmaceutical Archives*, II, No. 11).

A catalogue of the spontaneous hybrids of the European flora, by E. G. Camus, is being published in current numbers of the *Journal de Botanique*.

The most important recent publication on American fossil plants is Professor Ward's "Cretaceous Formation of the Black Hills as indicated by the Fossil Plants," extracted from the *Nineteenth Report of the United States Geological Survey*. The paper is profusely illustrated, largely by reproductions of photographs made directly from the specimens.

In the advance sheets for December 19 of *Consular Reports*, Edward H. Thompson, United States Consul at Progreso, gives some interesting information concerning sisal fibre, from which it

[1] Bailey, W. W. *Botanizing*. A guide to field collecting and herbarium work. Providence, Preston & Rounds Co., 1899.

appears that the fibre of this Yucatan agave was first brought into considerable use between 1750 and 1780, though the first plantation was not established until 1848. The largest plantation to-day is said to be yielding about 375,000 pounds of cleaned fibre per month.

The Amoles, or saponifying plants, of Mexico are treated in Vol. III of *La Naturaleza*, by Dr. Manuel Urbina.

Mr. Gifford Pinchot, Forester of the United States Department of Agriculture, has published the first part of a primer of forestry as *Bulletin 24* of his Division. The book is clear, simple, well illustrated, and attractively gotten up.

Robert T. Hill's notes on the forest conditions of Porto Rico are published as *Bulletin 25* of the Division of Forestry of the Department of Agriculture. A number of photogravures illustrate the graining of the principal Porto Rican woods.

Persons who go to the Adirondacks will find useful a recently issued flora of North Elba, by Professor Peck. It is published as No. 28 of Vol. VI of the *Bulletin* of the New York State Museum, and may be bought for twenty cents.

A comparison of the floras of the alpine and temperate regions on the great Mexican volcanoes is published by Professor Heilprin in Vol. III of the Mexican journal *La Naturaleza*.

An interesting list of plants growing upon trees at Bad Nauheim, classified according to their means of dissemination, by Jaap, is to be found in the September–October number of the *Deutsche botanische Monatsschrift*.

Icones Selectæ Horti Thenensis is the title of a new serial, devoted to the plants flowering in the extensive collections of M. van der Bossche at Tirlemont, Belgium. The plates are drawn by D'Apreval, and accompanied by text by de Wildeman. The first fascicle appeared in September, 1899.

Draba, as represented in the West by the aurea stylosa forms, is analyzed by Heller in the December *Bulletin* of the Torrey Club, with the result that three species and one variety are described as new.

Some of the Canadian violets recently split off from what has passed current for *Viola cucullata*, are brought together by J. M. Dickson in the *Journal and Proceedings of the Hamilton Association for 1898–99*.

A chart showing the blossoming season of the wild-goose plum in 1898, published in *Farmers' Bulletin 103* of the Department of Agriculture, will be of interest to students of phenology.

Ten additional species of Sisyrinchium from the Southern States are described by Bicknell in the *Bulletin* of the Torrey Club for December.

Captain John Donnell Smith has recently distributed the fifth volume of his *Enumeratio Plantarum Guatemalensium*, etc., to which are appended, as heretofore, extra-prints of his later articles published in the *Botanical Gazette* descriptive of plants of this region.

The results of a biological survey of Mt. Shasta, California, are published by Dr. Merriam as No. 16 of *North American Fauna*. Though avowedly incomplete, his notes on the distribution of Shasta plants are of unusual value because of the detailed data given under each entry.

A catalogue of the ferns and flowering plants of South Dakota, by Professor Saunders, constitutes *Bulletin* 64 of the Agricultural Experiment Station of that state.

The second fascicle of *Icones Bogorienses*, published by the Buitenzorg Garden, deals with the Anonaceæ of that establishment, and is written by Dr. Boerlage.

Apropos of recent attempts to classify the species of Rosa on anatomical grounds, M. Crépin publishes some valuable generalizations in the thirty-seventh volume of the *Bulletin* of the Royal Botanic Society of Belgium.

A study of the Japanese lacquer tree, *Rhus vernicifera*, from the standpoint of morphology and anatomy, is reprinted by Dr. Möbius from the *Abhandlungen* of the Senckenbergische naturforschende Gesellschaft.

A very curiously fasciated plant of an unnamed species of Cotyledon is described and figured in a teratological paper by Gallardo in No. 4 of the *Comunicaciones* of the Buenos Aires Museo Nacional, recently issued.

Students of hybrid docks will be interested in a paper on the North European forms of the genus Rumex, by Murbeck, reprinted from *Botaniske Notiser* for 1899.

Professor V. M. Spalding's paper on the white pine (*Pinus strobus*), revised and enlarged by Professor Fernow, is published as *Bulletin* 22 of the United States Department of Agriculture.

A revision of the North American species of the genus Frullania, by Professor A. W. Evans, is published in Vol. X of the *Transactions* of the Connecticut Academy of Arts and Sciences.

Professor Macbride has done a useful piece of work in allowing his *Myxomycetes of Eastern Iowa* to expand into the handsome volume, *The North American Slime-Moulds*, just issued by The Macmillan Company — a volume which should be in every botanical library.

Students of kephir and similar ferments will find interest in a paper by H. Marshall Ward and J. Reynolds Green, on a sugar bacterium, reprinted from Vol. LXIV of the *Proceedings* of the Royal Society.

The October number of the *Queensland Agricultural Journal* contains a report on the timber trees of a district of North Queensland, by J. F. Bailey, which includes an annotated list of 111 species, several of which are figured.

"Forestry Notes for Iowa" is the title of a paper by Professor Macbride separately printed in advance from the tenth *Report* of the Iowa Geological Survey.

A preliminary catalogue of plants poisonous to stock, by V. K. Chesnut, is reprinted from the annual *Report* of the National Bureau of Animal Industry, for 1898.

The *Bulletin* of the Torrey Botanical Club for November contains papers on *Lycopodium complanatum* and *L. chamæcyparissus*, by F. E. Lloyd; the dichotomous Panicums, by G. V. Nash; *Delphinium carolinianum* and related species, by P. A. Rydberg; New and interesting plants from western North America, by A. A. Heller; A new genus of powdery mildews — Erysiphopsis, by B. D. Halsted; and The habitats of the Pellæas, by E. J. Hill.

Part I of the second volume of the *Contributions* from the botanical laboratory of the University of Pennsylvania contains nine papers, presenting the results of laboratory investigation in various fields of botany.

In 1879 Professor Beal buried seeds of twenty-two species of plants in the soil, in inverted bottles, and at the end of each period

of five years the viability of some of them has been tested. After twenty years in the soil, nine species, all common weeds, germinated, the percentage varying from 2 to 58, while thirteen species failed to grow, — as appears from a note in the September number of the *Journal* of the Columbus Horticultural Society.

From a recent article in *Gartenflora* it appears that at the great St. Petersburg botanical garden 24,176 species and varieties of plants are cultivated, the herbarium contains over a million and a half specimens, and the library consists of 14,040 works, bound in 27,588 volumes.

PALEONTOLOGY.

The Later Extinct Floras of North America.[1] — In the preface Dr. Hollick explains the conditions under which this posthumous work of Professor Newberry's was prepared for the press. An edition of twenty-five plates was issued without text in 1878, under the title, *Illustrations of Cretaceous and Tertiary Plants of the Western Territories of the United States.* Subsequently a revised edition of these, with forty-three additional plates, was printed, but not distributed, being withheld for the completion of the text. Professor Newberry's death stopped further progress on the work. Two sets of the plates bore manuscript names. From these plates, Professor Newberry's manuscript, the labels on type specimens, and Professor Newberry's previous publications, the present text was compiled. This was evidently a laborious undertaking carefully carried out, as evinced by the text and occasional editorial notes.

One hundred and seventy-four species are figured and are described in the text, with the exception of some species of which the editor found no manuscript or other descriptions by Professor Newberry. The plates are beautifully executed. The species described are all from the Cretaceous and Tertiary formations, and are from the Western States and Territories, excepting *Sequoia gracillima*, described as also from New Jersey, and *Salix membranacea*, described from New Jersey only. Six new species are described, namely, *Abietites cretacea*, *Sabal grandifolia*, *Myrica* (?) *trifoliata*, *Salix foliosa*,

[1] Newberry, John Strong. *The Later Extinct Floras of North America*, a posthumous work, edited by Arthur Hollick. Monograph of the U. S. Geological Survey, vol. xxxv, pp. i–xvii, 1–295, Pls. I–LXVIII. Washington, 1898.